WHAT IS CLAIMED IS:

1. An injection molding apparatus, comprising:

an injection molding machine for injecting molten resin, said injection molding machine including a screw cylinder having a tip, a nozzle at said tip and a threadedscrew advanceable in said screw cylinder for injecting molten resin from said nozzle;

a non-metallic injection mold comprising a cavity mold and a core mold forming a hollow therebetween for forming an injection molded product therein;

a first molten resin flow path extending from inside said screw cylinder to a terminal end of said hollow; and,

a pressure relief valve located on said first molten resin flow path at said terminal end of said hollow and adapted to release said molten resin from said first molten resin flow path at a pressure of said molten resin in said first molten resin flow path greater than a predetermined value.

2. The apparatus recited in claim 1 wherein said pressure relief value is adjustable for accommodating molten resin having a range of pressure and flow characteristics.

3. The apparatus recited in claim 1 wherein said non-metallic injection mold comprises cast epoxy and thermo-set materials.

4. The apparatus recited in claim 1 wherein said pressure relief valve comprises a movable pin actuated by a spring bias, said movable pin being adapted for movement between a first position blocking said molten resin when said pressure is less than said predetermined value; and, to a second position releasing said molten resin in said first molten resin flow path into a second molten resin flow path in fluid communications with said first molten resin flow path thereby relieving pressure in said first molten resin flow path.

5. The apparatus recited in claim 1 wherein a stationary and a movable mold portion attached to said injection molding machine for accessing said cavity mold has a mold parting line, said mold parting line having said second molten resin flow path formed therein, whereby hardened resin in said second molten resin flow path is removed from the cavity mold with the molded part.

6. The apparatus recited in claim 5 wherein said pressure relief valve is mounted to one of said stationary and movable mold portions.

7. The apparatus recited in claim 1 wherein said non-metallic mold is made from a material selected from the group consisting of: a cast epoxy, stereo lithography, urethane, and silicone.

8. The apparatus recited in claim 4 wherein said pressure relief valve is adjustable to said predetermined value by adjusting a threaded screw supporting said spring bias biasing said movable pin.

9. The apparatus recited in claim 4 wherein said pressure relief valve is adjustable by changing said spring bias.

10. The apparatus recited in 1 wherein said pressure relief valve is adapted to automatically reset after said pressure in said first molten resin flow path falls below said predetermined value.